SUPPOSITORIES

BP103P - PHARMACEUTICS UNIT 4

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SUPPOSITORIES

Introduction-

- Suppositories are semi solid dosage forms of various shapes & size meant for insertion into body cavities like rectum, vagina, nose, ear etc except mouth.
- Suppositories comes under semi-solid preparations because it is prepared by melting all the ingredients.
- All types of suppositories are melt at normal body temperature.

TYPES OF SUPPOSITORIES

There are mainly 5 types of suppositories:-

1. Rectal Suppositories
2. Vaginal Suppositories
3. Urethral Suppositories
4. Nasal Suppositories
5. Ear Cone

TYPES OF SUPPOSITORIES

RECTAL

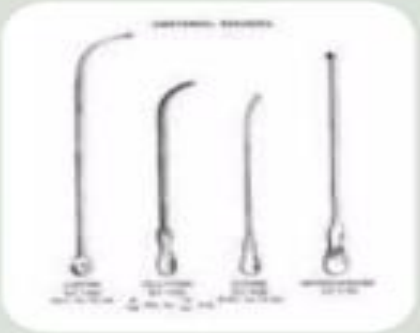
Cone or torpedo shaped weighing 1-2g

VAGINAL

(pessaries)

Globular, oviform,cone or wedge shaped weighing 2-8 g.

Made from glycero-gelatin or macrogol base.



URETHRAL BOUGIES

Thin pencil shaped and pointed at one end.

Male bougies -4g and100-150 mm.

Female bougies-2g and 60-75mm.

NASAL

Thin pencil shaped with pointed ends.

1.2 g and 9-10 mm long.

EAR CONES

Pencil shaped.

ADVANTAGES OF SUPPOSITORIES

- Suppositories can be used for unconscious patients.
- Suppositories are compact dosage form.
- They have less chance of side effect.
- It can be used for patients having severe nausea and vomiting.
- Suppositories are suitable for children and old aged patients who can not swallow tablets.
- They can be used to avoid rectal and vaginal infection.

DISADVANTAGES OF SUPPOSITORIES

- Suppositories have problem of patient acceptability.
- It is not suitable for patients suffering from diarrhea.
- Irritating drugs cannot be prepared in suppository form.
- Incomplete absorbtion may be obtained.
- They must be stored at low temperature otherwise they will get melt.

SUPPOSITORY BASES

- Suppositories bases are the excipients that are used in the manufacturing of suppositories.
- They plays important role in the release of medicament.
- Suppository bases must dissolve in the body cavity to release medicament.

PROPERTIES OF IDEAL SUPPOSITORY BASES

- It should be melt at body temperature.
- It should be inert and non-irritating.
- It should be physically and chemically stable.
- It should be good in appearance.
- It should be compatible with any medicament.
- It should be stable if heated above its melting point.
- It should release medicament readily

TYPES OF SUPPOSITORY BASES

There are mainly 3 types of suppository bases :-

1. Oleaginous Bases or Oily Bases:
•Cocoa Butter
•Hydrogenated oils.

2. Hydrophilic Bases or Water Soluble Bases:
• Gelatin bases
•Polyethylene glycol

3. Emulsifying or synthetic Bases:
•Witepsol
•Massa estarinum
•Massuppol

METHOD OF PREPARATION

Suppositories can be prepared by following three methods:-

1. Molding Method
2. Compression Method
3. Hand rolling and shaping Method

1. MOLDING METHOD

The steps involve :-

Melting the Base

Incorpating any required medicament

Pouring the melt into molds

Allowing the melt to cool and congeal into suppositories

Removing the formed suppository from the mold

2. COMPRESSION METHOD

The steps involve :-

Base and other formulative ingredients are mixed

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Suppository mass in placed in a cylinder

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The cylinder is closed, pressure is applied on one end

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When mold is filled, movable end plate is removed

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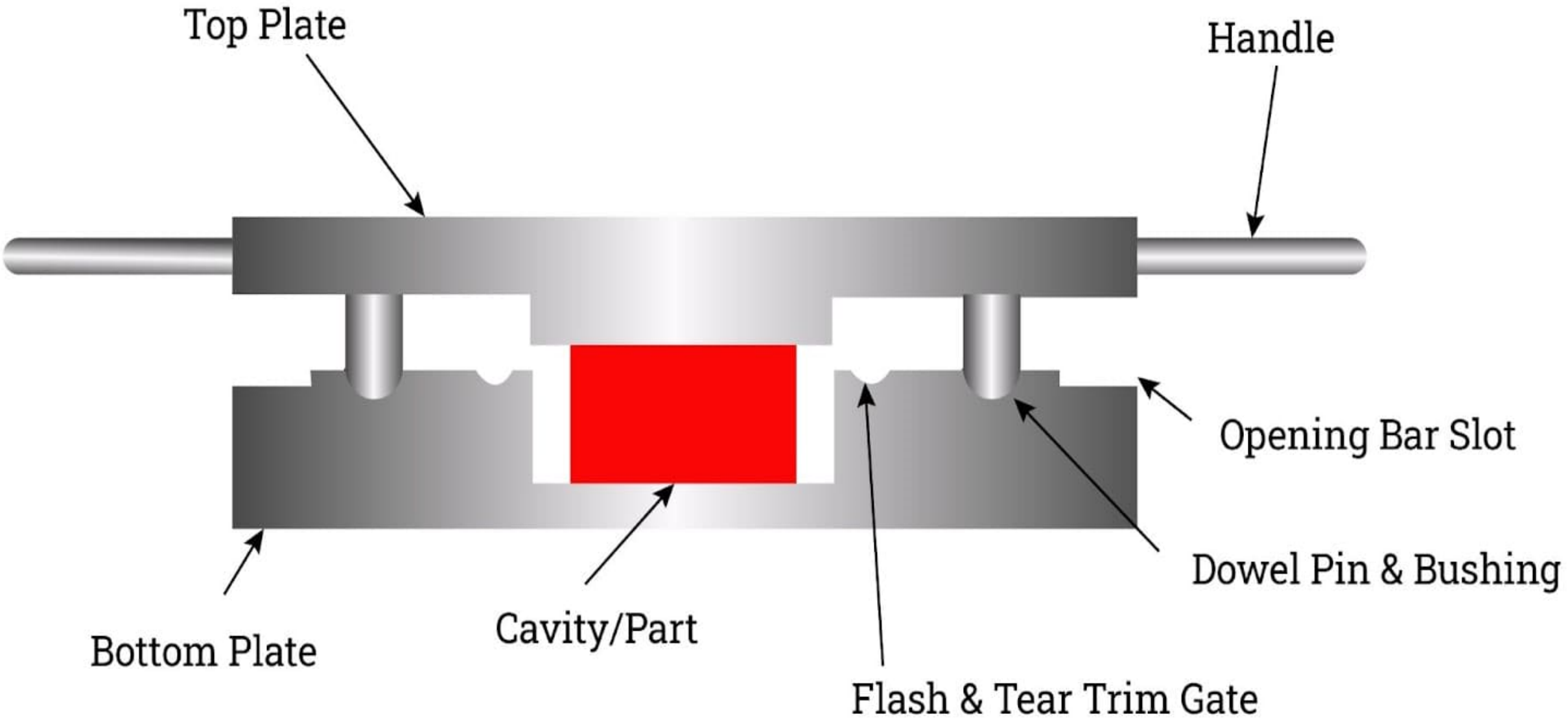
The formed suppositories

Compression Process



3. HAND ROLLING AND SHAPING

It is the oldest and simplest methods. The steps involve :-

The drug is made into fine powder

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Incorporated into suppository base

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By trituration and kneading

↓

Mass is rolled into rod shaped by fingers

↓

Rods are cut into pieces

↓

Desired shape is given by hands

EVALUATION OF SUPPOSITORIES

The following test are performed for evaluation of suppositions:-

1. Test of appearance
2. Test of Physical strength
3. Test of dissolution rate
4. Test of melting range
5. Test of softening
6. Test of uniformity of drug content

EVALUATION

1. **Test of Appearance**:

   This test assesses the visual characteristics of a drug or formulation. It includes observations related to color, shape, size, and any visible defects. A well-defined appearance ensures consistency and quality.

2. **Test of Physical Strength**:

   Physical strength refers to the ability of a drug product (such as tablets or capsules) to withstand mechanical stress during handling, packaging, and transportation. Common tests include hardness (tablet breaking force) and friability (tablet abrasion).

EVALUATION

3. Test of Dissolution Rate:

Dissolution rate measures how quickly a drug substance dissolves from its dosage form (e.g., tablet, capsule) in a specified medium (usually simulated gastric or intestinal fluid). It ensures that the drug releases as intended for effective absorption.

4. Test of Melting Range:

The melting range determines the temperature range at which a substance transitions from a solid to a liquid state. It’s crucial for substances like waxes, suppositories, and ointment bases.

EVALUATION

5. Test of Softening:

Softening tests evaluate the softening point or temperature at which a material becomes pliable or viscous. It’s relevant for materials like suppository bases or ointments.

6. Test of Uniformity of Drug Content:

This test ensures that the drug content is consistent across different units (e.g., tablets from the same batch). Variations can impact efficacy and safety. Methods include content uniformity testing.

DISPLACEMENT VALUE

- The volume of suppository for particular mould is uniform but its weight will vary because of difference in density of base and medicament used.

* For this displacement value of medicament is taken in consideration.

Displacement value is defined as “The quantity of drug which displace one part of the base”.

DISPLACEMENT VALUE

The displacement value of a given medicament can be determined as –

1. Prepare and weight 6 suppositories containing base = *a gm*
2. Prepare and weight 6 suppositories containing, say 40 % drug = *b gm*
3. Calculate amount of base in medicated suppositories = $\frac{60}{100} \times b$ = *c gm*
4. Calculate amount of base in medicated suppositories = $\frac{40}{100} \times b$ = *d gm*
5. Calculate amount of base displaced by *d gm* of drug = *(a-c) gm*

So, Displacement Value of drug = $\frac{d}{a-c}$

EXAMPLE -

Calculate the displacement value of medicament in cocoa butter suppositories containing 40 % medicament prepared in 1 gm suppository mould.
* the wt of 10 medicated suppositories is 15 gm.

Solution :-

Weight of 10 pure base suppositories $= 1\ gm \times 10 = 10\ gm = a$

Weight of 10 medicated suppositories $= 15\ gm = b$

Amount of base in medicated suppositories $= \frac{60}{100} \times b = \frac{60}{100} \times 15 = \frac{900}{100} = 9\ gm = c$

Amount of medicament in medicated suppositories $= \frac{40}{100} \times 15 = = \frac{600}{100} = 6\ gm = d$

So displacement value $= \frac{d}{a-c} = \frac{6}{10-9} = \frac{6}{1} = 6\ ans$


Thank You